

B<sup>1</sup>.  
cont.  
phenylethyl)acrylamide, N-(2-phthalimidoethoxymethyl) acrylamide, vinyl benzoate, ethyl acrylate, n-butyl acrylate, 2-ethylhexyl acrylate, ethyl methacrylate, n-butyl methacrylate, t-butyl methacrylate, 2-ethylhexyl methacrylate, cyclohexyl methacrylate, vinyl acetate, and vinyl butyrate.--

--22.(NEW) The ink composition of claim 19, wherein the side chains have a number average molecular weight of 1000-2000 and comprise macromonomers which are

(a) soluble in water but are insoluble in non-polar organic solvents; and

(b) made from non-ionic monomers selected from the group consisting of ethoxytriethylene glycol methacrylate, methoxypolyethylene oxide methacrylate, methoxypolyethylene oxide acrylate, polyethylenoxide methacrylate, polyethylenoxide acrylate, and N-vinyl pyrrolidone.

--23.(NEW) The ink composition of claim 19, wherein the side chains comprise 15-60% by weight of the graft copolymer.--

#### REMARKS

As indicated above, original claims 6-12 have been canceled and new claims 13-23 have been added. No additional fee is required for these new claims.

Support for new claims 13-23 can be found as follows:

<u>Claim</u>	<u>Support</u>
13	Claim 6 + lines 36-38 on page 3
14	Claim 7
15	Claim 8
16	Claim 9
17	Claim 10
18	Claim 11
19	Claim 12 + lines 36-38 on page 3
20	Claim 7
21	Claim 9
22	Claim 10
23	Claim 11

The Applicants thus submit that new claims 13-23 add no "new matter" to the present application, and request that such claims be entered into the present record for further examination.

Claims 6-12 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure of Ma et al (EP-A-0851014, Ma(I)) in view of Ma et al (US5085698, Ma(II)). The Applicants respectfully traverse this rejection and submit that claimed subject matter is in fact patentable over the art of record.

Claims 13 and 19 (the independent claims, formerly claims 6 and 12, respectively) relate to an aqueous coating composition (claim 6) and a washfast ink composition (claim 12). These two compositions are based on the follow common components:

(a) an aqueous vehicle comprising water and at least one organic co-solvent, wherein water comprises no more than 80% by weight of the total weight of the vehicle, and wherein the co-solvent is water-soluble or water-miscible so as to form a single phase vehicle with water;

(b) a pigment dispersion comprising a pigment and a polymeric dispersant, and

(c) a film-forming, non-ionic graft copolymer binder comprising a hydrophobic backbone and non-ionic, hydrophilic side chains, said side chains having a number average molecular weight of at least 500, wherein the graft copolymer is soluble in the vehicle but substantially insoluble in water.

Ma(I), in its most relevant aspects, discloses an ink jet ink comprising components (a) and (b) as set forth above, in combination with a hydrosol polymer.

The hydrosol polymer is stated to be water-insoluble (page 4, line 11), as is component (c) above. The hydrosol, however, should not be "completely soluble" in the aqueous vehicle (page 4, lines 27-29), while component (c) is required to be soluble in the aqueous vehicle. The Examiner has raised an issue regarding the meaning of "soluble" in the context of the present invention versus the disclosure of Ma(I), which the Applicants

submit actually defines a clear distinction between the disclosure and claims.

The Applicants would at this point note a distinction between a water-insoluble polymer and a polymer "being soluble in the aqueous vehicle", and a "soluble" polymer versus a "dispersible" polymer. As stated in the claims and in lines 34-38 on page 3 of the specification, the aqueous vehicle is a "single-phase" mixture of water and a co-solvent.

A polymer may contain sufficient hydrophilic functionality to be in and of itself water soluble in the sense of a single-phase mixture (mixture on a molecular level). The same general polymer with less hydrophilic functionality may be stably and uniformly dispersed in water, but the mixture exists as a two-phase system - a discontinuous solid (or semi-solid) polymer phase and a continuous water phase. The discontinuous solid (e.g., hydrophobic polymer portion) is stabilized in the mixture by the presence of the hydrophilic functionality, but the polymer is nonetheless not soluble and present as a separate phase.

In certain instances, the two-phase dispersed systems can be converted into a single-phase mixture by the presence of a co-solvent which is miscible with (or soluble in) water, and in which the polymer is miscible or soluble. The aqueous vehicle (medium) as set forth in the present claims and as disclosed in Ma(I) is a mixture of water and one or more co-solvents.

The graft polymer as set forth in the present claims is insoluble in water but soluble in the aqueous vehicle. The hydrosol as set forth in Ma(I) is insoluble in both water as well as the aqueous vehicle, although it can be stably dispersed (two-phase) in the aqueous vehicle.

This distinction between the hydrosol of Ma(I) and the graft polymer of the present claims is made clear by the discussion in Ma(I) in lines 11-12 on page 4 ("The hydrosol polymers are ... dispersed as a separate phase in the aqueous carrier medium."). In fact, Ma(I) makes clear that the hydrosol should ~~not~~ be soluble in the aqueous vehicle (page 4, lines 27-29).

Ma(I), therefore, as compared to the claimed invention, is deficient in its disclosure of a graft polymer soluble in the

aqueous medium, and in fact teaches away from using such a polymer. Ma(I), therefore, in and of itself neither discloses nor suggests the claimed invention.

Ma(II) does not remedy this defect in the disclosure of Ma(I), thus there is no supportable basis for the obviousness rejection of the present claims based on this combination of disclosures.

The Applicants, therefore, submit that the rejection of record cannot be supported either legally or factually on the present record, and respectfully request withdrawal of the same.

#### Conclusion

In view of the foregoing, the Applicants respectfully submit that claims 13-23 are in fact patentable over the art of record and that this application is now in condition for allowance, and request an action to that effect.

Should, however, the Examiner wish to discuss any of the issues involved in this case, the Examiner is invited to contact the undersigned at the telephone exchange indicated below.

Respectfully submitted,



BART E. LERMAN  
ATTORNEY FOR APPLICANTS  
REGISTRATION NO. 31,897  
TELEPHONE: 302-992-5285  
FACSIMILE: 302-992-2953

Dated: \_\_\_\_\_

3/21/52